Incidental Harassment Authorization
Final Marine Mammal Monitoring Report for
August 2015 to August 2016

Washington State Department of Transportation
Ferries Division

Mukilteo Multimodal Project Tank Farm Pier Removal
June 24, 2016

Washington State Ferries

Washington State Department of Transportation

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Cover: Gray Whale off Gedney Island (April 2015) (Steve Smith)

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1.0 Monitoring Results

Mukilteo Tank Farm Pier pile removal began August 3, 2015 and was completed November 5, 2015. August 3, 2016 pile removal was done by direct pull, and so was not monitored. Two IHAs (dated March 18, 2014 and August 26, 2015) applied to the pier demolition.

Table 1-1 and 1-2 provides a summary of species observed, permitted Level B takes and observed Level B takes for each IHA.

Table 1-1 IHA #1 Level B Acoustical Harassment Take Summary

Species	Number Observed	Permitted Take	Observed Take
Harbor Seal	34	1,170	53
California Sea Lion	22	540	63
Steller Sea Lion	0	180	1
Harbor Porpoise	3	720	6
Dall's Porpoise	0	270	0
SR Killer Whale	0	4	0
Transient Killer Whale	0	35	0
Gray Whale	0	70	0
Humpback Whale	0	28	0

Table 1-2 IHA #2 Level B Acoustical Harassment Take Summary

Species	Number Observed	Permitted Take	Observed Take
Harbor Seal	300	1,820	38
California Sea Lion	292	840	50
Steller Sea Lion	1	280	1
Harbor Porpoise	7	1,120	4
Dall's Porpoise	0	420	0
SR Killer Whale	0	15	0
Transient Killer Whale	12	48	0
Gray Whale	0	90	0
Humpback Whale	1	36	0

2.0 Description of the Activity

2.1 Introduction

WSF plans to replace the existing Mukilteo Ferry Terminal with a new terminal, which will be located to the east of the existing location at the site of the former U.S. Department of Defense Fuel Supply Point facility, known as the Tank Farm property, which includes a large pier extending into Possession Sound (Figure 2-1/2-2). Completion of the entire project will occur over four consecutive years.

WSF plans to submit an Incidental Harassment Authorization (IHA) request for each consecutive year of construction. This report addresses the first year of construction, which is limited to removing the Tank Farm Pier.

2.2 Project Setting and Land Use

The Mukilteo Tank Farm Pier is located in Mukilteo, Snohomish County, Washington. The pier is located in Section 4, Township 21 North, Range 4 West, and is located in Possession Sound, a tributary to Puget Sound (Figure 2-1). Land use in the area is a mix of residential, business and local parks. The Port of Everett Mt. Baker Terminal is to the east of the Tank Farm Pier.

2.3 Project Description

The Mukilteo Tank Farm Pier, which has not been used for fuel transfers since the late 1970s, covered approximately 138,080 ft2 (3.17 acres) over-water and contained approximately 3,515 12-inch diameter creosote-treated piles which were removed (see Appendix A – Project Sheets 1 and 2). Demolition of the pier removed approximately 7,300 tons of creosote-treated timber from the aquatic environment.

Though demolition was planned to take approximately ten months spanning two in-water work windows, it was completed ahead of schedule, in eight months and spanned only one in-water work window. Removal of the pier took place from land and from a barge containing a derrick, crane and other necessary equipment. Piles were removed with a vibratory hammer or by direct pull (Figures 2-3, 2-4, 2-5). A navigation channel was also dredged in the first work window. Piles located within the dredge channel were completely removed.

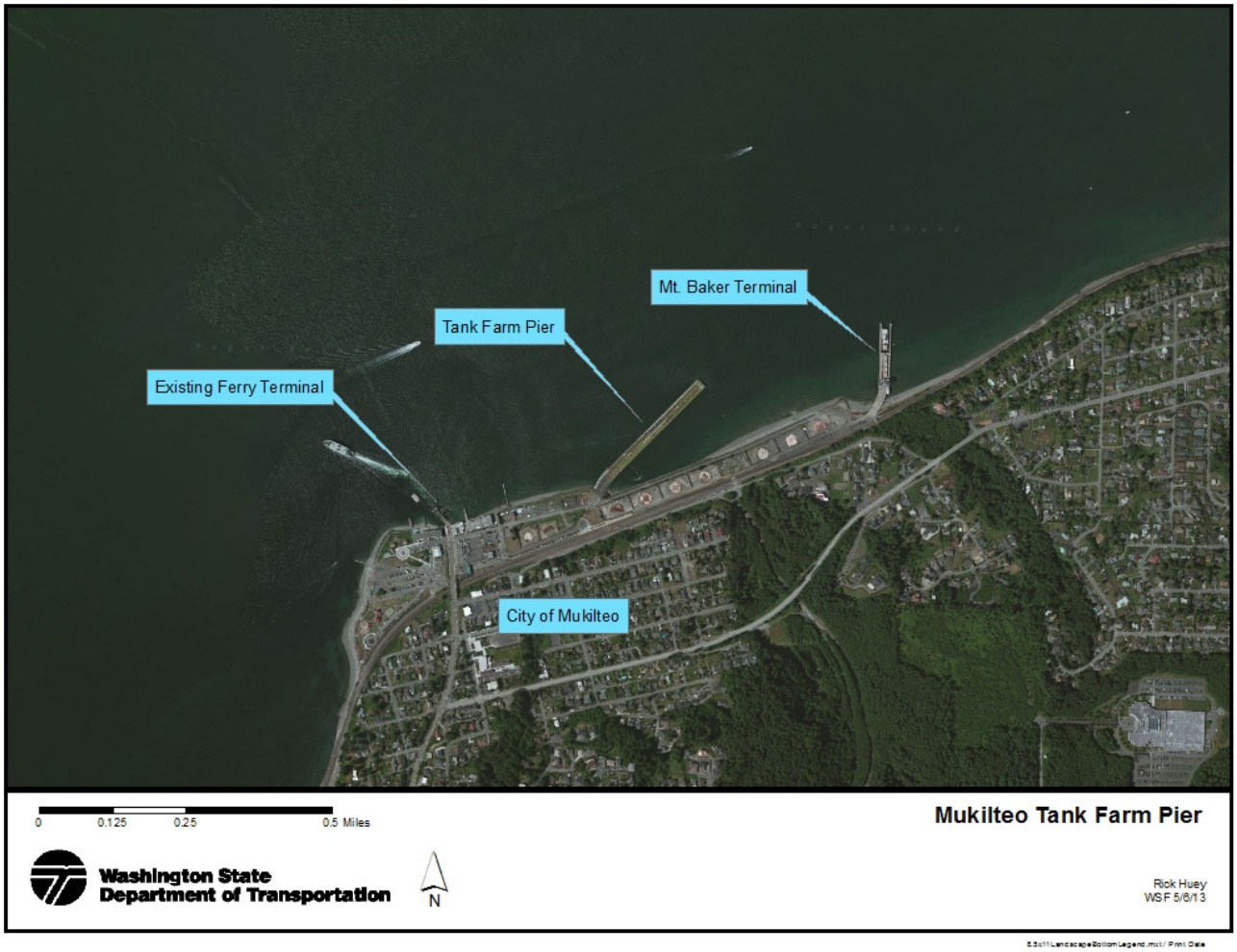

Figure 2-1 Vicinity Map

Figure 2-2 Former Mukilteo Tank Farm Pier

Figure 2-3 Direct Pile Pull with Chain

Figure 2-4 Vibratory Hammer Pile Removal

Figure 2-5 Placing Piles on Disposal Barge

3.0 Marine Mammal Monitoring Plan

Qualified marine mammal observers were present on site at all times during pile removal. Marine mammal behavior, overall numbers of individuals observed, frequency of observation, and the time corresponding to the daily tidal cycle were recorded.

The project included vibratory removal of 12-inch timber piles. Based on in-water measurements at the WSF Port Townsend Ferry Terminal (Laughlin 2011), removal of 12-inch timber piles generated 149 to 152 dB RMS with an overall average RMS value of 150 dB RMS measured at 16 meters. A worst-case noise level for vibratory removal of 12-inch timber piles will be 152 dB RMS at 16 m.

For vibratory pile removal and driving, no injury will occur (source level sounds are less than 180 dB), and so will result in a Level B acoustical harassment zone of influence only. This zone is calculated to extend to the 122 dB RMS in-water background isopleth for vibratory pile removal. Using the NOAA practical spreading model, 152 dB_{RMS} measured at 16m will attenuate to the 122 dB RMS background within ~1 mile (1.6 km) (Figure 3-1).

3.1 Monitoring to Estimate Take Levels

WSF implemented the plan in order to estimate project Level B acoustical harassment take levels in the ZOI:

- During vibratory pile removal, two land-based biologists monitored the area from the pier and the Mukilteo Lighthouse (Figure 3-2).
- To verify the required monitoring distance, the vibratory Level B acoustical harassment ZOI was determined by using a range finder or hand-held global positioning system device.
- The vibratory Level B acoustical harassment ZOI was be monitored for the presence of marine mammals 30 minutes before, during, and 30 minutes after any pile removal activity.
- Monitoring was continuous unless the contractor took a significant break, in which case, pre-monitoring was repeated (30 minutes) prior to restarting pile removal.
- When marine mammals were observed, their location within the ZOI, and their reaction (if any) to pile-driving activities were documented.

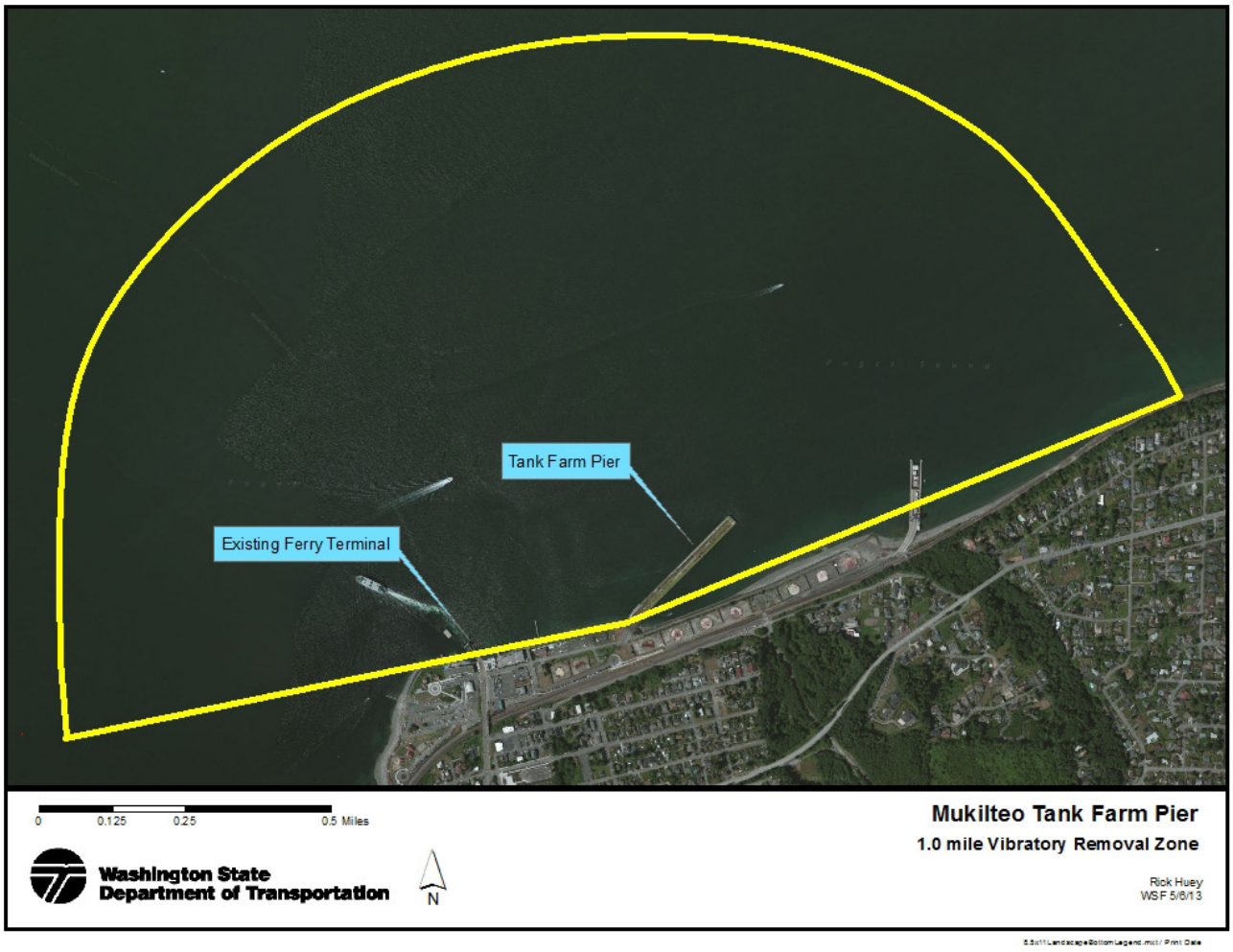

Figure 3-1 Mukilteo Tank Farm Pier Removal Vibratory ZOI

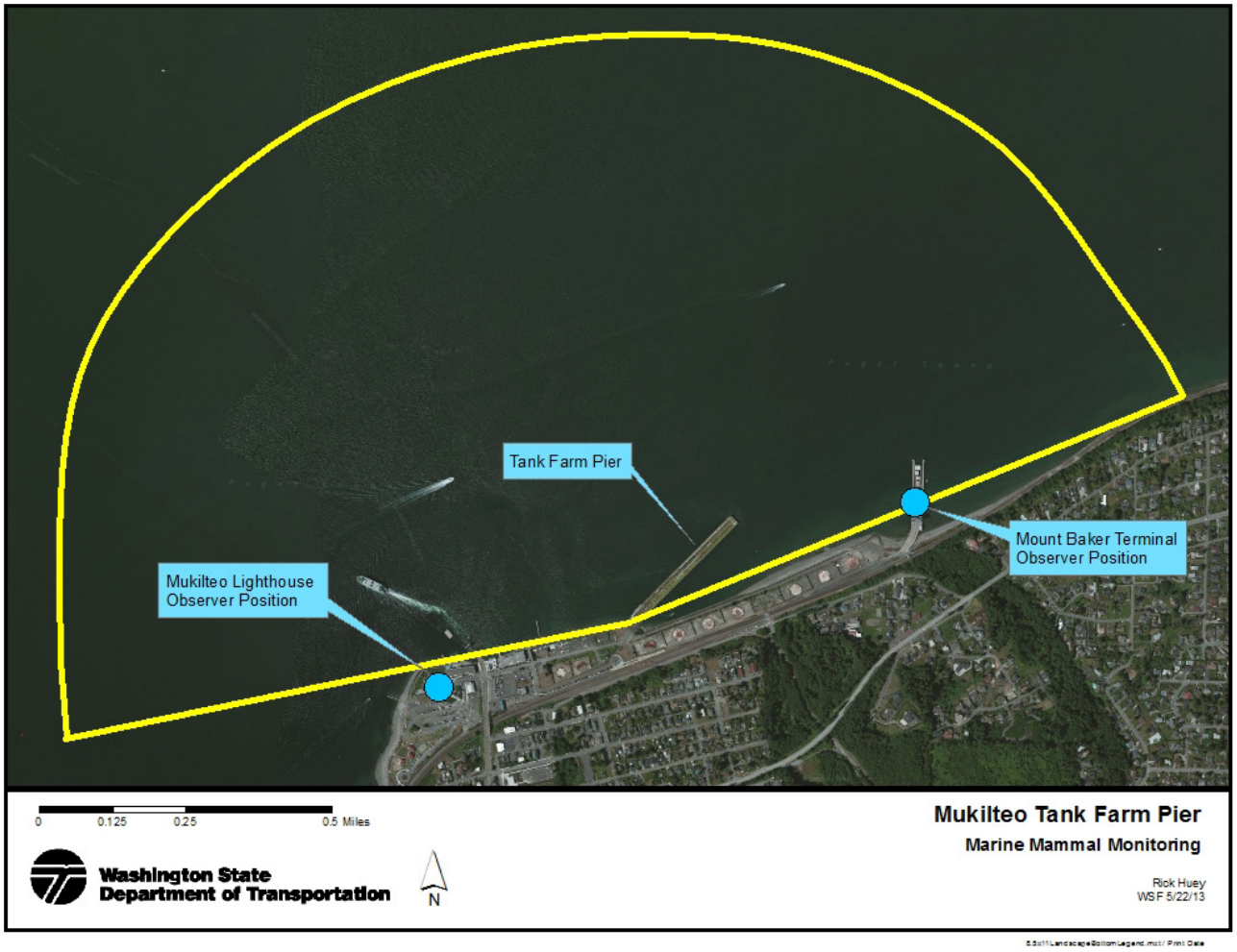

Figure 3-2 Mukilteo Tank Farm Pier Removal Monitoring

3.2 Monitoring to Prevent Killer Whale Take

WSF implemented the following measures to prevent SRKW Level B acoustical harassment take:

- If SRKW (as identified by Orca Network, NMFS or another qualified source) approach the ZOI during vibratory pile removal, work will be paused until the SRKW exit the ZOI to avoid Level B harassment take.
- If killer whales approach the ZOI during vibratory pile removal, and it is unknown whether they are SRKW or transient, it shall be assumed they are SRKW in order to prevent SRKW Level B harassment take.

- If SRKW enter the ZOI undetected, up to 4 'unexpected' Level B harassment takes may be used. Work will be paused until the SRKW exit the ZOI to avoid further Level B harassment take. The intent of monitoring is to prevent any take of SRKW. The 4 unexpected Level B harassment takes will be used only if necessary.

WSF implemented the following Marine Mammal Monitoring Plan for transient killer whale:

- If positively identified transients (as identified by Orca Network, NMFS or another qualified source) approach the ZOI during vibratory pile removal, and it is known that SR killer whales are not in the vicinity (from the same qualified sources) work will continue.
- If the 35 transient killer whale takes have been used, and killer whale approach the ZOI during vibratory pile removal, work shall be paused to avoid take.

3.3 Minimum Qualifications for Marine Mammal Observers

Qualifications for marine mammal observers included:

- Visual acuity in both eyes (correction is permissible) sufficient for discernment of moving targets at the water's surface with ability to estimate target size and distance. Use of binoculars may be necessary to identify correctly the target.
- Experience or training in the field identification of marine mammals (cetaceans and pinnipeds).
- Sufficient training, orientation or experience with the construction operation to provide for personal safety during observations.
- Ability to communicate orally, by radio or in person, with project personnel to provide real time information on marine mammals observed in the area as necessary.
- Experience and ability to conduct field observations and collect data according to assigned protocols (this may include academic experience).
- Writing skills sufficient to prepare a report of observations that would include such information as the number and type of marine mammals observed; the behavior of marine mammals in the project area during construction, dates and times when observations were conducted; dates and times when in water construction activities were conducted; dates and times when marine mammals were present at or within the Level B acoustical harassment ZOI; dates and times when pile removal was paused due to the presence of marine mammals.

Appendix: Tank Farm Pier Removal Monitoring Data